Journal of the Society of Arts.

FRIDAY, AUGUST 27, 1858.

NEW ZEALAND.

The Society has just received from the Colonial Secretary of New Zealand a Blue Book, containing the statistics of that Colony for the years 1853-1856 inclusive :—

From these it appears that in 1856 the colony contained a European population of 48,193 souls, including 2,653 military—viz., 27,418 males and 20,775 females; the military included 2,062 males and 591 females. The population in 1855 was only 37,192, divided among the Province, excluding the military, as follows:—Auckland, 15,335; New Plymouth, 2,488; Wellington, 10,252; Nelson, 7,509; Canterbury, 6,160; Otago, 3,796. The births were 1,722 (904 of males and 818 of females); 406 deaths occurred, and 404 marriages were solemnized. Of the marriages 169 were solemnized according to the rites of the Church of England, 15 according to those of the Presbyterian kirk of Scotland, 50 according to the rites of the Roman Catholic Church, 75 according to the rites of the "free church" of Scotland; 4 Presbyterian congregations, 48 Wesleyan Methodists, 12 of "Congregational Independents," 2 of Baptists, 14 of the "Primitive Methodist Society," 4 of the Lutheran Church, and 14 by registrars. As far as it has been ascertained, it appears that of the whole population 11,309 cannot read, 6,170 can read only, and 28,061 can both read and write; the per centage of each class is respectively 24·83, 13·55, and 61·62. 326 vessels, with an aggregate tonnage of 85,748 tons, entered inwards at the several ports of New Zealand in 1856; and 323 vessels, with an aggregate tonnage of 82,991 tons, cleared out. The above is exclusive of coasting vessels. The value of the imports into the several ports was £710,868, and that of the exports £318,433. The imports into Auckland alone were of the value of £270,987, and included apparel and drapery, arms and ammunition, candles, flax, sheep, hardwares, leather, glass, agricultural implements, metals, provisions, wine, and tobacco. The principal exports from Auckland appear to be—Kauri gum (£14,000), bullion and coin (£20,000), wheat (£9,004), copper ore (£10,528), oil (£5,922), potatoes (£10,013), timber (£5,308), and wool (£6,289). The total exports of grain, flour, &c., from the colony in 1856 were in value (£28,151), Kauri gum (£18,591), oil (£10,514), potatoes (£19,958), timber (£23,008), wool £146,072) (2,559,618 lbs.) 101,596 letters were received in the colony in 1856, and 95,164 were despatched; 147,101 newspapers were received, and 124,153 sent out. The total quantity of land in culture was—in Auckland, 63,069½ acres; in New Plymouth, 9,603; in Wellington, about 15,000; in Nelson, 13,869; in Canterbury, 8,006; and in Otago, 5,022. The total revenue of the colony in 1856 was £188,328. The total convictions of Europeans in the magistrate's courts of the colony for 1856 was 2,005, of Maories 86, of which 1,151 were for drunkenness (Europeans), 38 (Maories). The mortality of the troops in the colony is 4·8 per thousand, being one-third less than in the United Kingdom, as stated in the return. 510 men were annually admitted into the hospital out of a thousand, being as stated one-half less than what occurs among infantry soldiers in the United Kingdom. Suicide appears to be more frequent than in the infantry in the United Kingdom, viz., 5 out of 10,000 in the place of two. Fevers are almost unknown, except a few bilious febrile attacks after intemperance and exposure to the heat. Smallpox has not yet appeared in the islands. Measles were introduced in 1845, and swept off 4,000 of the aborigines, the old and the young being the severest sufferers. Several cases of scarlet fever simultaneously occurred. The troops enjoy comparative immunity from pulmonary diseases, and, although influenza swept over the colony in 1853, no soldier succumbed to the epidemic. Diseases of the liver are infrequent, compared with England, and, although diseases of the digestive organs are more frequent than there, the attacks are milder. The troops continue to be singularly free from a certain class of maladies generally prevalent among soldiery. No season can be reckoned less salubrious than another in New Zealand. A series of meteorological tables are given, compiled from observations made at places in or near the coast. None have yet been made, however, in the interior, the climate of which we are as yet completely ignorant of, and it is hoped that settlers resident away from the sea coast will make meteorological observations, so that intending emigrants and others may be able to judge of the inland seasons of the country from numerical data, in place of flattering verbal descriptions.

From the data thus obtained, and other sources of information, the coast climate of New Zealand, from Stewart's Island to the North Cape, may be described as the most changeable in the world, and at the same time the most strictly temperate. For, between these two points, including a space of eight hundred miles in latitude, calms, rain, and winds, clouds and sunshine, and heat, varying between forty and seventy degrees of Fahrenheit's scale, are occasionally experienced in twenty-four hours. This singularity of the climate is probably produced by the shape and mountainous character of a great part of the country and the immense sea encircling the islands. Much importance has been attached to the mean annual temperature of countries, and New Zealand, in consequence of conclusions from this source, has been said to possess an Italian climate. But there are marked points of difference between the seasons of New Zealand and Italy. Thus, in Italy there is a sort of summer winter, when cattle must be provided for indoors as in winter, and during which for several hours of the day all out door work is interrupted by heat. There is no similar summer winter in New Zealand, and, it is the opinion of persons who have sojourned in different parts of the world that the Anglo-Saxon race can work and expose themselves to the climate of New Zealand without injury during more days in the year, and for more hours in the day, than in any other country.

With regard to the temperature, it may be inferred from the observations which have been made that the climate of the interior is warmer in summer, and colder in winter, than around the coast. These observations show that the mean annual temperature of the North Island of New Zealand is 57° Fahr., and of the Middle Island 52°. January and February, which months correspond to July and August in England, are the warmest months in New Zealand—and June and July, corresponding to December and January, are the coldest. Rome, Montpellier, and Milan, possess climates having nearly the same mean annual temperature as the North Island of New Zealand, and Jersey, one of the Channel Islands, in this respect resembles the Middle Island. The climate of London is 7° colder than the climate of the North Island, and 2° colder than the climate of the Middle Island. In New Zealand the nights are about 12° colder than the days. The mean daily range of temperature is under twenty, and the extreme range is occasionally upwards of 30°. Great variations of temperature are more common in the Middle Island than in the North. The mean temperature of places in New Zealand is lower than that experienced in corresponding latitudes in Europe, but the temperature there is higher than that experienced in corresponding

latitudes in America. It may be observed that no single locality in Europe has a temperature during the whole year like New Zealand. The North Island, in short, possesses the summer heat of Paris, Brussels, and Amsterdam, with the winter cold of Rome; while the Middle Island has a Jersey summer, and a winter in coldness resembling that of Montpellier. The difference between the mean temperature of the coldest and warmest months in the year in New Zealand is about 20 degrees: at Rome it is 27°, at Montpellier 33°, at Milan 38°, and at Jersey 22°, while New York and Quebec, placed in the same latitudes as Wellington and Otago, experience tropical heats in August and polar colds in January. Snow seldom lies on the ground at the level of the sea in the North Island, and not very often in Middle Island. But all round the year, the summit of Ruapahu, the highest mountain in the North Island, and the great mountain chains in the Middle Island, are covered with snow. Ice is occasionally seen in winter from one extremity of New Zealand to the other, but frosts are comparatively slight to the south of Auckland, although the North Cape is occasionally covered with hoar frost. An idea of the mildness of the climate at Nelson and Canterbury, in the Middle Island, may be drawn from the fact of sheep frequently lambing in midwinter with no greater loss than five or ten per cent.

With reference to the power of the solar rays, it is stated that, in the month of December, 1856, at Auckland, the sun's rays indicated a temperature of 99° Fahr. During the years 1849, 50, and 51, some observations were made on this subject at Auckland, and it was found that the mean maximum temperature of the sun's rays during the summer months was about 101° Fahr. On one cloudless calm day in February the thermometer rose to 124°, and during the same months on the banks of the Waikato river, in the interior of the North Island, to 126°. The greatest intensity of the rays occurred from noon until half-past two, when the sun was decreasing in altitude. But this stream of heat from the sun during the summer is not of daily occurrence, for even at Nelson, perhaps the most sunshiny part of New Zealand, there are about ten days in every summer month during which the sun is more or less veiled with clouds. The heat of the sun, in consequence of the winds and moisture in the atmosphere, is comparatively not much felt, and cases of Coup de soleil, a malady not unusual in New South Wales, are here extremely rare. It is probable, from the intensity of the sun's rays in sheltered spots, that grapes and other fruits ripen at places in New Zealand where the registered summer temperature is not sufficiently warm to produce such fruits.

It appears that the fall of rain in New Zealand was greatest at New Plymouth and least at Otago, and that more rain falls, and the number of rainy and showery days is greater in the North Island than in the Middle Island. Great irregularity, however, occurs all over the country in the monthly and annual quantities of rain falling in different years, but there is no doubt that most rain falls in winter. There is, in fact, no proper wet and dry season in New Zealand; fourteen days seldom pass without rain, and it rarely continues for three successive days. Heavy rains occasionally occur, although slight when compared with those experienced on the Australian continent. Upwards of 3 inches of rain fell in 24 hours at Auckland in March 1853, and 3½ inches once fell at Nelson in eight hours. The temperature of the rain is sometimes above and sometimes below that of the air. From the facts recorded, it results that more rain falls there than in London, but much less than that occurring on the west coast of England.

No observations are recorded on the moisture in the atmosphere, but, from some experiments made in 1849 and 1850, it was found that more moisture was suspended in the atmosphere at Auckland than in the atmosphere surrounding London. Persons not conversant with meteorological observations will find proofs of the presence of this moisture in the luxuriousness of the vegetation in New Zealand, the heavy night dews, and the mould which collects on unused shoes and wearing apparel. But this moisture in the climate must not be confounded with raw dampness. It produces an exquisite softness of the skin, and settlers rarely have that unpleasant glazed feeling of the skin so often experienced in dry climates. This moisture in the climate is produced by the evaporation continually going on during dry weather from the South Sea, and it is only necessary to remember that New Zealand stands in the centre of the greatest expanse of ocean in the globe to perceive the powerful influence of this cause.

In probably no country in Europe is the atmosphere so frequently agitated by winds. The mean pressure of the wind at Auckland is nearly a pound on the square foot, and the strongest wind yet registered at Auckland exerted a pressure of 35½ lbs. on the square foot, equivalent to a velocity of 84½ miles per hour. A gale is indicated by a velocity of 50 miles an hour. The winds increase in force and frequency as we advance southwards from Auckland. Cook and Foveaux Straits are celebrated for stiff breezes and gales. At Nelson, standing at the bottom of Tasman's Bay, 14 gales, on an average, occurred annually. All round the coasts a sea breeze occasionally blows in summer.

In several places on the eastern coast, where there are mountain chains ascending about 3,000 feet above the level of the sea, a hot wind is occasionally experienced in summer. This hot wind melts the snow on the mountains of the Middle Island, swells the rivers fed from these sources, and, rushing down on the plains in different directions, according to the shape of the valleys, raises the thermometer 20° or 30°. Fortunately for vegetation this hot wind is generally the precursor of rain. On one occasion, on the Canterbury plain, a thermometer exposed to this wind rose to 113° Fahr. Different theories have been propounded as to the cause of this wind. It is probably an elevated current of the hot wind from the Australian continent, which is interrupted and directed downwards on certain places by the high mountains, while the lower current of this Australian hot wind is generally, but not always, entirely cooled by passing over the surface of the sea before reaching the western coasts of New Zealand. That this hot wind is not produced by the plains of New Zealand is almost proved by the wind being as warm at the foot of the snowy range on the Canterbury plain as at the coast. That it is derived from Australia is inferred from vessels sailing from New Zealand to Sydney having been kept back for days a long distance from the Australian coast by hot winds, and from the occasional, although rare occurrence, of a wind of about 70° being experienced at Auckland and other places on the western coast of the North Island when westerly winds with fine weather have been blowing for several successive days in summer.

According to the observations made, the air exerts a greater pressure over the North Island than the Middle Island. The influence of the wind on the atmospheric pressure has been observed all round the coasts, in one locality depressing, in another raising the barometer. The winds, unless of considerable force, are so modified by the shape of the islands that they are nothing but eddies from the greater polar and equatorial currents. Generally wind from the equator, which brings rain, depresses the thermometer, and southerly or polar winds, accompanied with fine weather, raise it. In the neighbourhood of high mountains, for example the Kaikoras, in the Middle Island, the barometer occasionally moves without an obvious atmospheric disturbance.

During eleven years there were registered at Nelson 2 solar haloes, 20 lunar haloes, 5 extraordinary tides, and 55 earthquakes. Excepting the last phenomena the above may be taken as an average for the whole of New Zealand. The earthquake region comprehends a space

of about 350 miles, or that portion of the country lying between White Island, latitude 37° 30′ and Banks Peninsula, latitude 43° 46′, having Cook's Strait for its centre. All earthquakes registered since the arrival of the settlers have been slight save those of 1848 and 1855. The atmosphere on the sea coast is not much disturbed by thunder storms, but in the neighbourhood of high mountains these phenomena are more frequent. At Nelson on an average of eleven years twelve thunder storms occurred annually, and at New Plymouth seven. Fogs are rare in the northern parts, but they increase in frequency and duration as we advance southwards. Hail storms occur. The Aurora Australis is occasionally seen from the Middle Island. Shooting stars are not so frequent as in England, and the heaven is rarely lit up with meteors of any brilliancy.

THE ATLANTIC TELEGRAPH.

The following is the report of Mr. C. T. Bright, the engineer in chief of the Atlantic Telegraph Company, in reference to the proceedings during the paying out of the cable from the *Agamemnon*:—

"*To the Directors of the Atlantic Telegraph Company.*

"GENTLEMEN,—On arriving at Valentia on the morning of the 5th inst., I forwarded to you by telegraph a brief report of the success which has attended the Company's endeavours to place Newfoundland in electrical communication with Ireland, and I have now the honour to lay before you fuller particulars of the operations carried out on board her Majesty's steamer *Agamemnon*, which I have been unable to do sooner, owing to the pressure consequent upon the return of the expedition.

"After our departure from Queenstown, at 2 a.m. on the 18th ult., we proceeded towards the rendezvous, which we reached on the night of the 28th, having been delayed by contrary winds and a head swell. We found the *Niagara*, *Valorous*, and *Gorgon*, which had left Queenstown on the 17th, waiting for us; and on the morning of the 29th, the sea being smooth, and the barometer standing at 30·15, the *Agamemnon* and *Niagara* were connected together by a hawser stern to stern; the end of the cable on board the latter ship was then brought by the boats of the *Valorous* to the *Agamemnon*, where the splice was finished by 1 o'clock, local time. our position then being lat. 52·8 N., long. 32·27 W., distant 938·3 statute, or 815 nautical miles from the White Strand Bay at Valentia.

"Having veered out a sufficient length to bring the splice into the centre of the curve formed by the cable hanging between the ships, the hawser was released, and we proceeded in our course slowly, paying out slack freely for the first three hours, after which the speed of the ship was increased to four, and at 7 p.m. to five knots per hour.

"All went on well until 7.45 p.m., when, immediately after passing from the outside to the centre of the coil in the main hold, the beginning of the first turn of the flake next below that in process of delivery was seen (on being exposed by the uncoiling of the cable above it) to be squeezed between the side of the cone in the eye of the coil and the end of the piece of wood by which the leading in part of the coil was defended.

"This injury occurred through the extent to which the coil was disturbed during the gales encountered in our previous voyage, and although the whole of the upper part of the coil which had been displaced to such an extent as to promise any difficulty in paying out was removed, and coiled on the upper deck abaft the fore-mast, it would appear that all the new cable which had been lately placed on the top of the main coil had shifted somewhat in the heavy weather, for it was necessary to rectify another defect, arising from the same cause at a similar part of the coil soon after.

"The old cable, which had been coiled for a longer time, and was more thickly coated with the mixture of tar and pitch, was not in the least degree disturbed.

"When the defective piece had been passed under some of the turns of the flake, then paying out to the outside, in order to allow of more narrow examination than could be made in the centre of the coil where the cable was passing out of the hold, Professor Thomson reported that continuity had ceased.

"On the cessation of signals I requested Captain Preedy to stop the ship, having placed Mr. Clifford to superintend the machine, so that as little cable might be paid out as was consistent with safety, Mr. Canning taking charge of the reinstatement of the injury, while M. Hoar attended to the dynamometer.

"It is in great measure owing to the care of these gentlemen that no ill resulted from this critical mischance.

"At 9.15 the fault was repaired, and shortly afterwards signals were again reported from the *Niagara*. We had at this time paid out 46 nautical miles of cable from the *Agamemnon*.

"The depth of water at the time of this stoppage was 2,030 fathoms, according to the nearest sounding.

"By noon on the 30th we had payed out 135·8 nautical miles, being then in lat. 52.24, long. 29.50, by observation, and 718 miles distant from Valentia, the *Niagara* having laid 130 miles of cable.

"After this the wind freshened, and a heavy swell got up, increasing the motion of the ship very much, and at midnight it was blowing hard from south-south-east, the consumption of coal required to keep up the speed which I desired to maintain being so great that some apprehension was felt in regard to the sufficiency of our supply of fuel.

"At noon on the 31st, the *Agamemnon* had payed out 280 miles, and the *Niagara* 285.

"The weather did not allow of any observation, but our run by dead reckoning made us about 605 miles from Valentia, and in the locality where the depth of 2,400 fathoms (the greatest in our route) was obtained by Captain Dayman, in Her Majesty's ship *Cyclops*, last year.

"During the day the wind continued to blow heavily, the sea running very high. By midnight the barometer had fallen to 29·50, and everything indicated a change for worse, rather than for better, weather. We had then paid out 358 miles of cable, the *Niagara* 365.

"At noon on Sunday, August 1, we were 478½ miles from Valentia, our position by observation being, lat. 52 deg. 26 min. 30 sec., long. 23 deg. 16 min. 30 sec., 434 miles having been paid out from the *Agamemnon* and 440 by the *Niagara*.

"During the morning the wind had changed to the south-west and the weather gave signs of amendment, but a heavy swell remained, and in the afternoon the breeze freshened, squalls followed each other in rapid succession, and the ship pitched as much as before.

"By noon on the 2nd we were in lat. 52.35, long. 19.48, 351·6 miles from Valentia, 605 miles of cable having been laid from the *Agamemnon* and 615 from the *Niagara*.

"In the afternoon the force of the wind decreased and the motion of the ship was much easier. At 3 p.m. we had to alter our course for a few minutes to avoid a three masted schooner, which passed us on the port bow so closely as to make it a subject for congratulation that she did not cross our path astern; the cable grew out very much to the starboard side during the change, but I caused an additional amount of slack to be paid out at the time, so that no undue strain came upon it.

"During the evening the weather was squally, and by 4 o'clock in the morning of the 3rd the wind had got round to the north-west, and a long slow swell from the south-west caused the ship to pitch and roll as much as before. At this time some excitement was created by a

bark bearing down upon our starboard beam; we increased speed to clear her, but she hove to on being intercepted by the *Valorous*.

"At noon on the 3rd we had paid out 776 miles of cable, being then in lat. 52 deg. 26 min., long. 16 deg. 7 min. 40 sec., 212·2 miles from Valentia, the *Niagara* having laid 780 miles.

"After the depth of water, which had averaged 2,000 fathoms since the 1st inst., began to lessen, and at 5 p.m. the greatest variations in our track (from 1,750 to 550 fathoms within about 10 miles) occurred; an extra per centage of slack being laid to provide for any irregularities which might there exist in the bottom. By midnight the depth had further increased to 216 fathoms.

"At 4 a.m. on the 4th the large coil in the main hold was exhausted, and we commenced paying out from the upper deck coil.

"By noon the water had deepened again to 400 fathoms; we were then in lat. 52.11, long. 12.40, only 89½ miles from Valentia, having laid 924 miles of cable, while the *Niagara* had laid 925.

"During the day the wind and sea dropped, and at 8 p.m., having reduced our distance from Valentia to 50 miles, the *Valorous* steamed ahead to make out the land.

"The water now shoaled gradually. At 8.30 p.m., having finished the second coil, a change was effected to the cable on the orlop deck.

"At midnight we were in company with the *Valorous* in sight of the Upper Skellig light, and at dawn on the morning of the 5th, abreast of the Blasquets, steaming slowly towards Valentia.

"At 6 a.m. we anchored in Doulas Bay, 2,022 nautical miles having been payed out between the two ships, and proceeded to coil a sufficient length of cable to reach the shore into one of the paddle-box boats of the *Valorous*.

"The wind freshened in the course of the morning, by which the landing of the end was somewhat delayed, the swell becoming so great that Captain Preedy got up steam in the *Agamemnon*, ready to put out to sea at any moment.

"At 3 p.m. the end of the cable was safely brought to the beach, and passed into the Company's station.

"The strain upon the cable varied during the paying-out under different circumstances of weather, depth of water, and speed of ship, as will be seen by the accompanying tabular log, which furnishes details recorded several times in each hour of the indicated strain, weight on breaks, angle of cable, rate of paying out, rate of ship, revolutions of screw, distance run according to Massey's log, distance made good by observations, and a journal of all the events worthy of note in each watch. An entry is also made of Greenwich time, so that the electrician's diary and the log kept on board the *Niagara* may be more readily compared with it.

"Some inconvenience was experienced by the great accumulation of pitch and tar, a second coating of which was laid on the cable when coiled away at Keyham for the winter, to prevent it from rusting, but this had also its advantage, in keeping down the cable leading from the coil, which had, if too dry in any place, a tendency to fly out when running at a high speed.

"The paying-out machinery (consisting of the addition of Mr. Appold's brake to one of the two machines fitted on board each ship last year, as recommended by your committee, with the dynamometer, for indicating the strain), has worked exceedingly well, in a manner which reflects the highest credit upon the manufacturers, Messrs. Easton and Amos.

"The handwheel for lifting the weights when required, designed by Mr. Amos, was of considerable service during the unfavourable weather which prevailed for the chief part of the voyage.

"The amount of slack paid out amounted to 227° upon the distance run. Less might have been laid, but I considered it desirable to insure the cable laying everywhere on the bottom—that ample slack should be used to cover any irregularities within bounds of probability.

"I must not conclude this report without again expressing my deep sense and appreciation of the laborious zeal and untiring patience exhibited by Capt. Preedy and the officers and company of the *Agamemnon*; nor can I too strongly express my obligation to Mr. Canning and Mr. Clifford, who so ably took part with me in the general superintendence of the work, and to Mr. Hoar and Mr. Moore, whose supervision of the dynamometer and machinery was of the utmost value to us; and it must not be forgotten that Capt. Hudson and the officers and crew of the *Niagara*, with Mr. Everett and Mr. Woodhouse, who had charge of the operation of paying out from the *Niagara*, with the assistance of Mr. Kell, have also performed their share of the labour equally with those who have returned to Ireland in the *Agamemnon*.

"I have the honour to remain,
"Your most obedient servant,
"CHARLES T. BRIGHT, Engineer.
"22, Old Broad-street, Aug. 19."

ARSENIC IN PAPER-HANGINGS.

In the *Journal*, Vol. V., p. 652, reference was made to the evidence of Dr. Alfred Swaine Taylor, given before a Committee of the House of Lords on the "Sale of Poisons Bill," in which he spoke of the injurious effects of paper-hangings coloured with arsenite of copper. Some of the rooms in the new offices of the Inland Revenue Department being hung with these papers, and the attention of the Commissioners having been called to the circumstance, they directed Mr. Phillips, the chemist to the Board, to investigate the subject.

The following is the report:—

"In the *Pharmaceutical Journal* for February last, page 429, it is stated that Dr. Halley, of Harley-street, had detected arsenious acid in the atmosphere of his study, the walls of which were covered with green paper, and that the test he employed was 'sheets of paper soaked in a solution of ammonia-nitrate of silver,' and that upon this paper were deposited numerous well-defined crystals of arsenious acid, visible under a low power with the microscope, and that the form of these crystals precluded the possibility of a mistake.

"Ammonia-nitrate of silver is a test of arsenious acid, but not in the manner which Dr. Halley seems to suppose, as it does not cause the deposition of crystals of arsenious acid (which are colourless), but produces a bright yellow precipitate of arsenite of silver, provided the amount of ammonia present in the test be very exactly proportioned to that of the nitrate of silver. If such be not the case, no precipitate is produced. These particulars are mentioned because Dr. Halley appears not to have resorted to any other test, but to have concluded merely from the appearance of the crystals formed on his test paper, and without analysing them, that they must be those of the poison in question.

"In the following experiments, made with a view to test Dr. Halley's conclusions, the interior surfaces of two closets were covered with green paper similar to the pattern annexed.

"Closet A had a capacity of 17 cubic feet, and was lined with about 48 square feet of the paper, or 2·8 square feet to each cubic foot of space.

"Closet B had a capacity of 26 cubic feet, and was lined with 53 square feet of paper, or 2·0 square feet to each cubic foot of space.

"These closets had no means of ventilation beyond

the chinks round the doors; the included air, therefore, would remain much longer in contact with the paper than would be the case in an ordinary room. The surface of the paper to the bulk of air enclosed was not less than fourteen times as great as it would be in a room 20 feet square and 12 feet high, thus showing that the conditions of the experiments were highly favourable to the impregnation of the air with arsenious acid, if such were possible. In each of these closets were placed two basins, one containing a solution of potash, the other ammonia-nitrate of silver, and a sheet of paper saturated with the latter reagent. Closet A was kept as much as possible from the influence of common gas. In closet B gas was allowed to burn during the day-time, the temperature of the included air being kept by the flame at from 74° to 82° F. The closets were carefully closed for 72 hours, the gas burning during that time 45 hours in closet B. The solutions of potash and ammonia nitrate of silver from each closet were then examined by Marsh's test, which is by far the most delicate known, and found to be quite free from arsenic.

"The sheets of paper saturated with ammonia-nitrate of silver were also free from arsenic, but had on their surface numerous colourless crystals which, when analysed, proved to be nitrate of silver, the evaporation of the water from the test-paper having concentrated the solution with which the paper was saturated to such an extent as to cause the nitrate of silver to crystallise out. On the test-paper was also found an amorphous substance having a dingy yellow colour, which speedily became black on exposure to light; the same substance was also observed on the surface of the ammonia-nitrate of silver contained in the basins, being most abundant in that which had remained in closet B, in which gas had been burnt. When analysed it was found to be sulphide of silver, the sulphur, no doubt, having been derived from the atmosphere of the laboratory, which always contains traces of sulphuretted hydrogen. This dingy yellow substance, which, without analysis, might be supposed by some to be arsenite of silver, was formed in a third closet, in which no arsenical compounds were present, thus proving that the green paper had no share in its production.

"The green paper used in the experiments is coloured with what is known as emerald or Schweinfurt green, which is a compound of arsenite of copper and acetate of copper. The paper contains 11·8 grains of arsenious acid to the square foot.

"The following conclusions may fairly be drawn from the experiments above described:—

"1st. That even when a small bulk of air is allowed to remain for a considerable time in contact with a large surface of the arsenical paper, and that too at a temperature of 80° F., not the slightest trace of arsenious acid is diffused in the air. Still less might the air of an ordinary room, which occupies a large space in proportion to the surface of the walls, and which is being constantly changed by ventilation, be expected to become contaminated by the poison.

"2nd. That the products of the combustion of gas do not facilitate the liberation of arsenious acid from the surface of the green paper.

"3rd. That arsenious acid is not volatilised from the surface of such paper except at temperatures too high for human endurance.

"It is probable that persons may have been affected by inhabiting rooms papered with arsenical hangings, not because the arsenious acid has been volatilised, but from the improper and frequent sweeping of the walls, by which minute particles of arsenite of copper might be detached from those portions of the surface of the paper which were not glazed, and becoming dispersed in the air, might be inhaled by persons occupying the room at the time. This only source of danger, which might be obviated by a little management in the cleaning of a room, and caution in the selection of a paper having but a little of its surface unglazed, appears not to have presented itself to the mind of Dr. Halley, who seems to have been possessed with the idea that injury to health was to be apprehended solely from the vapourisation of the arsenious acid. Dr. Taylor, on the other hand, ascribes the danger to the fact that the colour is 'put on very loosely,' and, therefore, by inference, easily detached and disseminated through the air, not as vapour of arsenious acid, but as minute particles of arsenite of copper.

"The subject under consideration being one of much importance, I have felt it necessary to enlarge upon it, and as Dr. Halley's statement is calculated to create an apprehension of danger which I believe has no existence, I beg to make the following remarks:—

"Dr. Halley states that on two occasions distinct crystals of arsenious acid were deposited on the surface of his test-paper from the air of his room. It is more than probable that if he had analysed the crystals, and not assumed their composition from their appearance under the microscope, he would have found them to be nitrate of silver. The test-paper which he used had no more effect in causing the deposition of crystals of arsenious acid than any other surface in the room would have, and to suppose that crystals of the poison were thus deposited, would be to imply that the air was impregnated with arsenious acid to an extent which must be fatal to persons inhaling it for a short time. Notwithstanding his statement that the air of his room furnished crystals of arsenious acid, he subsequently says that, at ordinary temperatures, with common atmospheric air, even when an aspirator was used, the amount of arsenic given off was 'inappreciably small,' omitting to mention what test he employed to detect a quantity not appreciable. The purport of his remarks, however, appears to be that arsenious acid, to an appreciable extent, is only given off from arsenical paper in rooms in which gas is burnt, and that the products of the combustion of the gas combine with the arsenic in the paper. If such be the case, it is difficult to conceive how the arsenious acid can be deposited from the air of the room in a free and crystalline state.

"It may be proper to mention that I and my family occupied a sitting-room three years, the walls of which were covered with paper heavily laden with arsenite of copper, and that for the same period my bed-room was also papered with arsenical hangings, yet neither I nor any member of my family experienced the slightest ill effect from such paper.

"In conclusion, I beg to express my opinion that no danger need be apprehended from a paper such as the one annexed, in which but a small proportion of the surface is unglazed, provided ordinary care be used when removing the dust from the walls, and that even if such care were not exercised, it is doubtful whether any pernicious effects would be felt by those inhabiting the room."

FRENCH WINE DISTRICTS.

The following is a summary of information collected in the principal wine-growing districts of France:—

"Alby.—The vineyards are flourishing; the oidium has caused but little injury, and an abundant vintage is expected.

"Blois.—The black grapes are beginning to ripen; the white grapes are nearly ripe; the appearance of the vineyards is perfectly satisfactory.

"Bourg.—The vineyards are in the best condition—the grapes are beginning to ripen.

"Cette.—The continued dry weather has prevented the growth of the grape, and we require great rain to repair the injury. The oidium had made its appearance, but was arrested by the sulphur applied to the vines.

"In the Gard the vineyards are magnificent, except in some elevated positions, where the grapes are suffering from the drought.

"Corrèze.—The vintage will be as early this year as in 1822. We expect to drink new wine towards the 15th September.

"Limoges.—The cold weather has retarded the growth of the grape; nevertheless we expect an abundant vintage.

"Marennes.—The vines are progressing admirably; the grapes are visibly increasing in size. There is no disease.

"Montelimart.—The appearance of a good vintage has produced a fall of 2f. the hectolitre. The price is now from 20f. to 22f. the hectolitre.

"Tarbes.—The vineyards are in the best possible condition. There will be an abundant vintage, and consequently empty casks are selling exorbitantly high."

SOUTH KENSINGTON MUSEUM.

During the week ending 21st Aug., 1858, the visitors have been as follows:—On Monday, Tuesday, and Saturday (free days), 3,025; on Monday and Tuesday (free evenings), 4,520. On the three Students' days (admission to the public 6d.), 662; one Students' evening, Wednesday, 92. Total, 8,299. From the opening of the Museum, 561,948.

Home Correspondence.

PAPER DUTY.

SIR,—The *Journal* of the 20th inst. contains an extract from the last report of the Commissioners of the Inland Revenue, which appears to me calculated seriously to mislead the reader, and I therefore ask leave to make a few remarks. The contents of the extract may be summed up in these assertions:—

1st. That the duty does not unduly restrict the manufacture or oppress the manufacturer.

2nd. That the commissioners are continually adapting their regulations to the wants and wishes of the manufacturer.

With regard to the first assertion, I affirm that the tax renders nearly twice as much capital necessary to carry on the trade of paper-making as would otherwise suffice. Let the government now lay a tax on the manufacture of iron, or on the manufacture of cotton or wool, which should render 100 per cent. more capital necessary for the same amount of production, and see what would be the result. Cotton and iron now rank first amongst our manufactures, but such an enactment would annihilate them. The rise of one-eighth of a penny per pound of cotton ruins manufacturers, and largely increases pauperism. What would a law which should practically double its price do?

But straw (of which a large amount of paper is made) is taxed 600 per cent. Is not that an undue pressure? Coloured rags are taxed 300 per cent. Is not that a restriction? In free trades if a man makes a bad debt and appeals to his creditors, they, if convinced of his honesty, generally accept a composition, but if a paper manufacturer fails to the government, they seize for twice as much as he owes; Is not that undue pressure?

The Commissioners point as a proof of their assertion to the fact of increased exports, but they do not point out the fact that we import as much paper as we export.

We fetch cotton wool from America, from India, from South and West Africa, manufacture and return it at less prices than it can be produced for in the countries where it grows; but in paper, the produce of cotton and linen waste, we are beaten by France, Prussia, and America. What possible reason is there for this result except the hindrances in the way of the manufacturer, and the fact that the simple charging and uncharging, with the separate packing necessary for export, appreciates the cost price at least 5 per cent., and is, therefore, really an export duty.

In what other staple trade can it be shown that the number of manufacturers has decreased from 30 to 40 per cent. within the last 20 years, and what but undue pressure could have brought about such a result? The assertion of the Commissioners is an apt illustration of the fisherwoman with the skinned eels; skinning does not hurt the paper-makers, they are used to it.

To the second assertion of the Commissioners, I say there is no denying that the 48 hours detention in the mill after charging is now reduced to two, and they now allow paper to be made up in parcels as well as in reams, and these are doubtless useful concessions. But if an unfortunate maker who has been all day writing the word "ream," happens to do so where he ought to write "parcel," he loses his paper. Many of the government offices use weighing machines to economise time, but the Commissioners demand the old fashioned scales and weights, thereby quadrupling the time necessary for the operation, and they are deaf to reason.

The whole number of drawbacks amount to seven, and the Commissioners take great credit for that on envelope cuttings; but they admit that the advantage of exemption was given to paper-makers in 1850, whilst the equality to stationers was only restored in October, 1857. This does not say much for the pliability of the board; especially as they have since refused a similar allowance on the cuttings from writing paper used in the manufacture of copy-books.

The mischief of the paper tax spreads itself over other trades. For instance, a large section of the markets for sewing cotton require it wound upon cards of millboard. Now such cards are produced in Prussia at less than one half of the English price, and so large is the quantity of pasteboard to cotton, that the duty on the paper appreciates the cost of the cotton by 5 per cent. The Commissioners refuse to allow a drawback on the paper thus used, and the consequence is that Manchester merchants purchase sewing cotton at Barmen, import it in *transitu* to Hull, and re-export it to South America and other ports. This is a proof of how the Commissioners adapt their regulations to the wants and wishes of the trade.

Paper as it comes from the rollers is just in a fit state to print, and the proprietor of the *Illustrated London News* proposed some time ago to take advantage of this circumstance, and to use the same steam power for printing books, and he would even have been willing to pay the tax upon the ink used, but the board refused the concession.

These are a few of the trade restrictions and oppressions, and ought to be known to all who read the report of the Inland Revenue Commissioners, but the great case for the repeal of the paper duty is the educational one. The tax on the "Irish schools lesson-books" is 12½ per cent. on the cost, "but," says Charles Knight, "the tax is doubled by the paper-maker." Now, if we assume that the paper-maker and the publisher double it between them, we are then justified in saying that for every hundred lesson books which would be printed, the Government steps in and restricts the issue to 75, thus keeping 25 children without instruction for every 75 taught. And in newspapers a great effort is at present making to universalize intelligence by means of penny papers. One of them, I am told, circulates 50,000 copies per day, and the government taxes their raw material 600 per cent., amounting to a fine of £50 per day for giving knowledge to the people. To me it seems, that if the Commissioners would only accommodate the trade by throwing their regulations in the fire and leaving manufacturers entirely alone, they would adopt the only possible mode of ceasing to restrict trade and oppress the

trader. I enclose an estimate of the probable results of the repeal of the duty. I am, &c.,

JOHN WATTS.

Whalley Range, Manchester, 21st Aug., 1858.

PROBABLE RESULTS OF THE REPEAL OF THE PAPER DUTY.

The repeal of the excise upon paper would set at liberty a million of money per annum, now paid in duty, and half a million invested in paper extra, as profit on the tax. This new fund would seek productive employment in paper-making or other industry, and, if turned over twice per year, would give 20s. per week each to 57,692 workmen, who, as heads of families, would represent 230,768 individuals.

The extra production would cause extra imports, extra Customs and Excise Duties, so that the repeal would not, even in the first year, be a total loss to the government.

Here is a table of articles subject to duty, with an estimate of the consumption of one working-class family per annum, and the duties receivable thereon:—

Corn, 4½ qrs.	£0	4s.	6d.
Butter, ½ cwt.	0	2	6
Sugar, ½ cwt.	0	7	6
Molasses, ½ cwt.	0	2	8
Tea, 6½ lbs.	0	9	2½
Coffee, 13 lbs.	0	4	4
Cheese, 56 lbs.	0	1	3
Tallow, ½ cwt.	0	0	9
Spirits, 1½ gall. (proof)	1	2	6
Tobacco, 6 lbs.	0	18	0
Beer, 3 barrels, say	1	0	0
	£4	13	2½

Many articles subject to duty are here omitted, which would add to the amount; but suppose we assume the average at £4 10s. per family,—then, 57,692 × 4½ = £259,614, which would be paid in extra Customs and Excise Duties to the Government. But manufactured produce does not find its way to the consumer at less than 33 per cent. of profit to the manufacturer, the wholesale and retail dealer.

One million and a half of money turned over twice per annum, would therefore leave about £999,999 extra subject to Income Tax, which, at 7d. in the pound, would give £29,164, which, added to the extra Customs and Excise, makes a total of £288,778. This is the probable result of the first year of repeal.

In the second year, the extra capital for productive employment would be, first, the £1,500,000 saved in the first year; second, £999,999 profit realised thereon; and third, £1,500,000 saved for the current year. Thus £3,999,999 would be ready for occupation, and, reckoning the extra Customs, Excise, and Income Tax upon this investment as formerly, it would be £288,778 × 2⅔ = £770,074.

In the third year, the extra capital would be, first, £3,999,999; second, £2,666,666 profit realised thereon; third, £1,500,000 saved for the current year. Thus £6,166,665 would be ready for occupation, and, reckoning the extra taxation upon this as formerly, it would be £288,778 × 4⅒ = £1,183,989; being, in the third year, more than the sum now collected as duty on paper.

MECHANICS' INSTITUTIONS AND SECONDARY EDUCATION.

SIR,—Almost everybody thinks it desirable to continue the education of boys beyond the period at which they usually leave school. To do this there must be some strong motive to exertion, and this motive must be the prospect of some pecuniary benefit. No virtue manifests itself more strongly among the thoughtful portion of the working classes than a desire to provide against that period when they are no longer able to work. Between three and four millions of the operative classes belong to Provident Societies. Some of these societies grew out of the small provincial clubs originally established to enable the members to visit the Great Exhibition, showing that the first five shillings saved often lays the foundation of future providence and economy.

In looking over the results of the Society of Arts Examinations, I find that nearly 85 per cent. of the Candidates were under 25 years of age. Beyond this age I do not think it reasonable to expect much mental effort, except in the case of those whose minds have been early disciplined either by good teachers or good parents.

The formation of character and the general habit of mind will depend chiefly on the associations between that time when a boy leaves school, and the period when he becomes occupied with the cares and responsibilities of a family.

If anything is done for the secondary education of the working classess, it can only be done as a rule up to the age of 25 years, and by the adoption of a simple organization with a view to some practical benefit within the reach of those who choose to make the effort.

The only safe principle upon which we can act in education is to help those who are anxious to help themselves, and with this view I would suggest a system of examinations, the award of certificates, and the payment of small annual amounts on the results of those examinations. The following table will help to illustrate the idea:—

GROUP I.

Writing from Dictation.

	3rd class. s.	d.	2nd class. s.	d.	1st c s.	ss d.
Arithmetic	2	0	4	0	6	0
English History and Grammar	2	0	4	0	6	0
Geography (Descriptive) for the 2nd and 3rd Certificates, and Physical for the 1st	2	0	4	0	6	0

GROUP II.

	3rd class. s.	d.	2nd class. s.	d.	1st class s.	d.
Algebra	2	6	5	0	7	6
Applied Mechanics	2	6	5	0	7	6
Geometry	2	6	5	0	7	6
Physics (Experimental).—Heat, Pneumatics, Hydrostatics, Electricity, and Magnetism	2	6	5	0	7	6
Chemistry	2	6	5	0	7	6
Drawing	2	6	5	0	7	6

The writing from dictation should be an absolute preliminary condition of examination, in any of the succeeding subjects, and the lowest or third certificates, in Group I., should be taken before any certificates were given in Group II., and these might be taken in any order convenient to the candidate, not exceeding three in one year. The only condition of examination should be a certificate from a teacher that the candidate had attended 40 hours instruction during the year in each of the subjects in which he proposed to be examined, and that he was engaged in some industrial occupation. If the principle of pecuniary aid be admitted, the rate of payment and the subjects are mere matters of detail. The money paid on these certificates should be placed to the account of the candidate in some approved Provident Society, either towards purchasing an annuity, assisting emigration, if this be thought desirable, or as a bonus at a certain period. The money should in no case be paid as a direct pecuniary reward. I think such a system of encouragement open to serious objections. The successful candidate should be encouraged to increase his certificate money by his own savings, and I believe, in many instances, the employers would give something themselves. I am not insensible to the objections which will be used against such a scheme; I have carefully considered the matter in all its details, and I shall be glad to hear an objection that can be urged against it. I give the plan publicity for the purpose of discussion, and I hope this communication will not be

passed over with the same indifference as many subjects which appear in the *Journal*.

I am, &c.,
J. C. B.

MECHANICS' INSTITUTIONS.

SIR,—The time is now approaching when, from the shortening of the days, the operations of Mechanics' Institutions should be commenced with earnestness, and it therefore behoves the respective managers to use every exertion in order to promote the due efficiency of their several Institutions, and their labours may be lightened by the conviction that judicious management at the commencement of a season spares much trouble afterwards.

Amongst the many schemes which have been devised for exciting public attention, there are few which have been so successful as a festive gathering, which, under the name of a soirée, affords an opportunity for making known the advantages of an Institution to very many who might otherwise not even be aware of its existence. If diligence be used in canvassing the locality, and any interest be taken in it by the resident gentry, there is not only the advantage of bringing all classes of the community into friendly union, but of contributing that pecuniary aid, the want of which is often so severely felt. But beyond all this the platform furnishes the opportunity of placing before a numerous audience the benefits to be obtained in a more attractive manner than could be otherwise accomplished. Prospectuses, essays, and pamphlets, may do much, but there is the difficulty of getting them read; and if this were overcome, they are by no means equal to the persuasive influence of the human voice when the hearers have come prepared to listen to the advocacy of mental cultivation for the promotion of moral and social welfare.

For full effect, however, to be given to such a demonstration, it should be followed by an active canvass of the locality, so that the most lukewarm should not have the excuse that they were never asked to contribute by a subscription to the success of the Institution. In every town there are many to be found who would not refuse to pay a small subscription, and who yet do not feel sufficient interest to take the trouble of searching out the proper officer, and tendering their assistance. The good work will also be additionally promoted by the employment of a regular collector, to be remunerated by a commission on his receipts. These, it may be said, are but helps to raise funds, but the want of funds is the paramount difficulty with the majority of Institutions, and if this difficulty were surmounted, an active committee of average intelligence would be enabled to place such attractions before the public as would materially aid in increasing their means of practical usefulness.

Another means of publicity is afforded by lectures, whether occasionally or at regular intervals. In Lancashire they profess to see no good in lectures, and pronounce them a failure; but the error often arises from expecting those delivered at Mechanics' Institutes to be of a similar kind and have the same object in view as those delivered before students in colleges. It is not practicable, nor even desirable, that systematic instruction should be given at Mechanics' Institutes by means of lectures. They should rather be of a suggestive character, pointing out the several advantages to be required by devoting the attention to the study of particular departments of science and literature, and be at the same time sufficiently attractive to secure the attendance of a numerous audience. If this be kept in view, lectures may prove a very valuable aid to most Institutions, and promote not only the pecuniary resources but the efficient working of the other departments by exciting a taste for mental cultivation.

In some Institutes a plan has been very successfully adopted of canvassing the locality to take season tickets for a specified number of lectures, and then making arrangements for the payment of lecturers according to the amount collected. It has the advantage of securing the committee against pecuniary loss, and at the same time of promoting the interests of the Institution. As to the number of lectures and rates of subscription, this is a subject which depends in a great measure upon the population, and which of course can be better judged of by each local committee. Great assistance in this department is supplied by the Yorkshire Union, who publish in their annual report a list of gentlemen willing to give gratuitous lectures, in addition to a list of paid lecturers. In the latter respect some good might be done by the Society of Arts, either through the advertising columns of their *Journal*, or by a list at stated intervals.

In my previous letters I spoke more particularly of the mode of extending the benefits of the Examinations of the Society of Arts by a systematic arrangement of Local Boards. I would now impress upon the managers of Institutes the importance of arranging by special classes for the study of the particular subjects comprised in the Society's programme, to take the initiative in inducing their members to enter into competition for the certificates, and to make the particulars known as widely as possible, so as to obtain the greatest number of candidates. If exertions be diligently used for this object, it will be found that the Examinations, by acting as an incentive to emulation, will materially promote the success of most of the Institutes that may be brought within their influence.

I am, &c.,
BARNETT BLAKE.

Leeds.

DRAINAGE BY ABSORBENT WELLS.

SIR,—The account I gave of the French absorbent wells, in 1840, and some remarks of mine on the same subject in the *Journal* of the Society, have been brought forward in support of the plan for discharging the sewage by means of such descending wells. I believe that M. Leslie will do great good by recommending absorbent wells as an occasional expedient for getting rid of impure water in the marshy and low-lying districts, but there are many objections to their application for discharging sewage matters into the sandy and gravelly substrata. The experience of Paris is opposed to it, for the well at Bondy got choked with solid matter, but there is, as I consider, the stronger reason, that to discharge manure underground would be no better than to discharge it into the sea, being only another form of wastage. There can be no doubt, as Mr. Mechi observes, that the underground strata would sooner defecate the the manure, but what we want is to accomplish the great object, long advocated by him, of saving the manure. Mr. Chadwick has shown, by the experience of Paris, that this has been accomplished to a considerable extent; and I should be sorry to be considered the advocate of any expedient which, instead of preserving fertilising materials, condemns them to destruction.

I am, &c.,
HYDE CLARKE.

42, Basinghall-street, E.C., 23rd August, 1858.

Proceedings of Institutions.

LONDON MECHANICS' INSTITUTION.—A public meeting of this Institution was held on Friday last, the 20th inst., in the theatre, Southampton-buildings, W. L. Birkbeck, Esq., president, in the chair. The object of the meeting was to receive the report of a special committee appointed in 1856 to collect funds to relieve the Institution of its building and floating debts. The following is a copy of the report:—"Your committee have to report to this meeting that they have, in pursuance of the powers

conferred upon them, collected the sum of £68 16s., and have further donations announced amounting to the sum of £47 3s., making together £115 19s. Out of the above sum of £68 16s., they have paid a sum of £10 to the Institution for a specific purpose. They have incurred expenses in making repeated applications to the government, rendered necessary by adjournments, at the latest moment, of appointments made at the treasury and elsewhere, and other preliminary proceedings, amounting to the sum of £20 1s. 4d., leaving a present balance of cash in hands of committee of £38 14s. 8d., which will appear more in detail by the cash account annexed. After mature deliberation, your committee have come to the conclusion that it is at present almost impracticable to collect a fund for the payment of the building debt of the Institution (which appeared to be the main object sought by the members in the appointment of your committee) and that the best course to adopt under the present circumstances will be to appeal to the public for funds to meet pressing emergencies, and especially for the reduction or extinction of the rent. For the sum of £3,500 the lease could be purchased, and thus the Institution could be relieved from the heavy annual payment for rent of £200. Your committee propose that an appeal be made to the public for donations to the amount of at least £1,500, leaving the remainder, if necessary, to be raised by mortgage of the lease purchased, by which means the annual rent would be materially reduced. Though your committee conceive that they have, under the terms of their appointment, the power to carry out this extended object, to remove any doubt that may exist upon the subject, it is now proposed to give them that power by a formal resolution. Several applications, both public and private, were made to the government for assistance, and some hopes were held out by Lord Granville, the then President of the Privy Council, to a deputation, consisting of members of this committee, officers and friends of the Institution, that material aid might, under certain conditions, be granted, and they were referred to the Treasury; but a dissolution of Parliament, hurried session, and change of ministry, occurring almost immediately afterwards, prevented that application from being prosecuted by the committee. The committee are of opinion that the terms upon which the subscriptions already announced have been received require that they should be returned to the subscribers who wish to withdraw them. The committee, however, believe that as a question of fact, all the subscribers are willing that their donations should be applied to the object which has been to-night announced. Your committee having now informed you of the steps they have taken, and of what they purpose doing, and having asked you for additional powers to enable them to carry their views into effect, place themselves in your hands. If you are content to express your confidence in them by granting them the further powers they ask, they are willing and anxious to unite with energy for the permanent resuscitation of this Institution; or, on the other hand, if you desire it, to resign their trust into your hands." The report was unanimously adopted by the meeting; and subscriptions were announced, in furtherance of the objects contemplated by the committee, amounting to £160. The committee was re-appointed, and the president expressed a strong conviction that its efforts would be ultimately successful. The following resolutions were carried unanimously:—"That the committee be empowered to collect subscriptions for the purchase of the lease of the Institution, and that the special committee report progress and donations received to each quarterly meeting." "That the auditors of the Institution be appointed auditors of the committee's account."

NEWPORT.—The new reading-room and library in connexion with the Athenæum and Mechanics' Institute, was opened on Wednesday, the 4th August. It is large and commodious, being 42 feet in length and 20½ feet in width, and is regularly supplied with a large number of papers and periodicals. The library contains upwards of 2,700 volumes, and additions are constantly being made. Classes for instruction and mutual improvement are intended to be formed during the ensuing quarters, and various lectures on popular, scientific, and amusing subjects will be delivered.

WINDSOR AND ETON.—A fête, in connexion with the Literary, Scientific, and Mechanics' Institution, took place at St. Leonard's, on Tuesday, the 17th instant. There was a very large gathering, although not so numerous as last year. The entertainments commenced with two cricket matches, one between members of the Windsor and Eton Institution against 11 of the Maidenhead Institute, and another between the junior members and the sons of members. There was a dinner, at which about 100 members of the Institute and their friends sat down. William Vansittart, Esq., M.P., occupied the chair. The other member of parliament for the borough, G. W. Grenfell, Esq., was unfortunately prevented from being present. In the afternoon, dancing, archery, and the Albanian minstrels were the chief attractions. The band of the Coldstream Guards was in attendance. Quoits and various other games were played. In a pecuniary point of view, it appears to be doubtful whether this fête will prove itself nearly so good as that held last year, for, although her Majesty contributed ten guineas, the Prince Consort and the Duchess of Kent each five guineas, and the members for the borough a like amount, the expenses this year have been far heavier, and the receipts from the sale of tickets considerably less. The day was observed in Windsor as a general holiday, nearly every shop was closed by one o'clock, and the bells were constantly ringing merry peals.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, Aug.* 20, 1858.]

Dated 28th July, 1858.

1697. A. Kellermann, Courbevoie, departement de la Seine, France—The employ of new vegetal substances for dying, and especially to replace cochineal dye.
1699. M. Johnson, Wheelock Iron Works, Sandbach, Cheshire—An improved rotary steam engine.
1701. J. Manton, Birmingham—A new or improved candlestick.
1703. W. E. Newton, 66, Chancery-lane—Imp. in gas meters. (A com.)
1705. H. Harden, Dundalk—Imp. in the construction of tubular steam boilers.
1707. E. A. Cowper, Great George-street, Westminster—Imp. in generating power from steam, and in engines and apparatus for that purpose.
1709. J. Cliff, Imperial Potteries, Lambeth—Imp. in the manufacture of soap.

Dated 29th July, 1858.

1711. J. Musgrave, Belfast—Imp. in stalls and inclosures for horses, cows, and pigs.
1713. G. S. Parkinson, 10, Lambton-terrace, Kensington—An improved connecting apparatus for working railway breaks, and effecting a communication between railway guards and drivers.
1715. J. L. Hinks, Birmingham—Imp. in machines for cleaning knives, forks, spoons, and such other articles as are or may be cleaned by polishing, also in machines for sharpening knives.

Dated 30th July, 1858.

1717. J. Luis, 1B, Welbeck-street, Cavendish-square—A machine for cutting up almonds for the use of confectioners and others. (A com.)
1719. J. Luis, 1B, Welbeck-street, Cavendish-square—A new system of infusion apparatus. (A com.)
1721. J. Spence, Liverpool—An imp. in the manufacture of sheet, hoop, and nailrod iron.
1723. C. Schiele and F. Schiele, Oldham—Certain imp. in "hydro-extractors," or centrifugal drying machines, and in the method of lubricating their bearings, which method is also applicable to other bearings where lubrication is required.
1725. T. Webb and J. Craig, Tutbury, Derbyshire—Imp. applicable to spinning, doubling, winding, and warping yarns or threads.
1727. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in candlesticks or holders for candles. (A com.)

Dated 31st July, 1858.

1729. J. S. Bailey, Keighley, Yorkshire—Imp. in machinery for combing wool and other fibrous materials.
1731. W. Hartley, Bury—Imp. in the arrangement of slide valves and side pipes, or valve casings of steam engines.
1733. G. Ashcroft and H. Wood, Blackweir, Cardiff—An imp. in hydraulic machinery.
1735. J. Houston, Nelson-square, Blackfriars-road—Imp. in the means of effecting the consumption of smoke in furnaces.
1737. H. Conybeare, Abingdon-street—Imp. in apparatuses for generating nnd super-heating steam and for producing the condensation of steam.
1739. E. J. M. Cetti, Brook-street—An imp in barometers, guages, and other analogous instruments.

Dated 2nd August, 1858.

1741. E. Agneni, 29, Devonshire-street, Queen-square, Bloomsbury —Increasing particularly the effect of decorative pictures, landscapes. drawings, and prints.
1743. G. S. Hill, Ryde—Imp. in hydro-pneumatic machinery.
1745. R. R. Jackson, Blackburn—Certain imp. in machinery or apparatus for sizing yarn.
1747. S. Hine, Macclesfield—Certain imp. in machinery or apparatus for twisting, doubling, and retwisting and winding silk or other similar fibrous material.
1749. W. B. B. Harvey, Bagnal-villa, Gresham-road, Brixton—Imp. in fly or screw presses.
1751. E. Heywood, Liverpool, and W. Heywood, Manchester—Imp. in the construction of metallic pistons.
1753. M. Billing, High Holborn—Imp. in metallic bedsteads and cots.

Dated 3rd August, 1858.

1755. G. Davies, 1, Serle-street, Lincoln's-inn — A process and apparatus for the extraction of oils for illuminating and lubricating purposes, and of carburetted hydrogen gas, from the native bitumen of the West Indies. (A com.)
1757. J. Shaw, Manchester—A machine for the manufacture of pasteboard and cardboard.
1759. J. Steel, Glasgow—Imp. in brewing and distilling.
1761. Lieut. J. Kingsley, 52, Great Coram-street—Imp. in the construction of steam boilers.
1763. J. Greenwood, Rawden, near Leeds—Imp. in the construction of steam boilers and other apparatus for heating water or superheating steam, which improvements are also applicable when heating air.
1765. C. De Jongh, Lautenbach, near Guebwiller, France—Imp. in machinery for assorting and preparing for spinning silk and other fibrous substances.

Dated 4th August, 1858.

1766. C. Callebaut, 2, Rue Ste. Appoline, Paris—Imp. in sewing machines.
1767. J. Spence, Liverpool—An improved method of rolling sheets from puddled steel or steel iron.
1768. J. Taylor, Birkenhead—Pneumatic and hydraulic machines.
1769. J. J. Russell, Wednesbury—Imp. in machinery for cutting and screwing the ends of tubes.
1770. J. W. Giles, Sydney, New South Wales—An imp. in propelling vessels.
1771. J. Badcock, High-street, Highgate—Imp. in apparatus to be applied to ladies' dresses and other articles of wearing apparel.
1772. W. Clay, Liverpool—An improved manufacture of metallic hoops, bands, and other analogous articles.

Dated 5th August, 1858.

1775. L. Hall, Black-lane Mill, near Bury, Lancashire—Certain imp. in looms for weaving.
1777. J. Luis, 1B, Welbeck-street, Cavendish-square—A machine for pulverising shell, horn, and whalebone. (A com.)
1779. J. Luis, 1B, Welbeck-street, Cavendish-square—A machine for drilling and grooving the naves of wheels, and also to force the axle box into the naves. (A com.)
1781. E. Leigh, Manchester—Imp. in machinery or apparatus for preparing and spinning flax, wool, silk waste, or other fibrous materials.
1783. D. McCrummen, Gourock—Imp. in the manufacture or production of paper, which improvements are also applicable in the production of alkaline and other salts.
1785. R. A. Brooman, 166, Fleet-street—Imp. in knitting frames. (A com.)
1787. W. Clay, Liverpool—Imp. in the construction of certain descriptions of bridges and girders.
1789. W. E. Newton, 66, Chancery-lane—An improved mode of ornamenting textile fabrics. (A com.)

Dated 6th August, 1858.

1791. G. H. Bovill, Durnsford-lodge, Wimbledon—Imp. in the manufacture of gas, also in the manufacture of coke and other fuel.
1793. C. F. Kirkman, Argyle-street, Regent-street—An improved mode of treating sewage of agricultural uses, and for machinery to be employed therein.

Dated 7th August, 1858.

1795. G. Watson, 6, Pond-hill, Sheffield—A washing machine.
1797. J. Walker, City-road—Imp. in the manufacture of electric telegraph cables.
1799. J. Smith, jun., Coven, near Wolverhampton—Imp. in agricultural steam engines, and locomotive steam engines to be used on common roads.
1801. J. Luis, 1B, Welbeck-street, Cavendish-square—A new covering, doubling, and twisting machine. (A com.)
1803. J. Taylor, Roupell-park, Streatham-hill, Surrey—Imp. in the manufacture of blocks for the construction of sewers and drains.
1805. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in apparatus for working railway breaks. (A com.)

Dated 9th August, 1858.

1807. J. G. Picking and T. P. Purssglove, Battersea—An improved pressure gauge for steam, gas, or other fluids.
1809. T. Ingram, Bradford—Imp. in means or apparatus for operating railway breaks.
1811. W. Smith, 3, Montrose-villas, Pownall-road, Dalston—An improved compound for coating or insulating electric telegraph wires, and for coating other surfaces.
1813. A. H. Williams, Cornhill—Imp. in fastenings for portemonnaies, pocket-books, and other like articles.
1815. W. E. Newton, 66, Chancery-lane—Imp. in machinery for drawing and twisting wool, or other fibrous material. (A com.)

Dated 10th August, 1858.

1817. T. Pickford, Mark-lane—Imp. in the preparation and manufacture of manure.
1819. M. Henry, 84, Fleet-street—Imp. in the manufacture or production of saltpetre, and the preparation of materials for the purpose. (A com.)
1821. F. Haeck, Schaerbeck, near Brussels—Imp. in the construction of cocks, taps, or valves.
1823. J. H. Whitehead, Royal George Mills, Saddleworth, Yorkshire —Imp. in the manufacture of woollen bags.

INVENTION WITH COMPLETE SPECIFICATION FILED.

1856. M. A. F. Mennons, 39, Rue de l'Echiquier, Paris—Imp. in the construction of Jacquard looms. (A com.)—14th August, 1858.

WEEKLY LIST OF PATENTS SEALED.

August 20th.

360. E. Borlase.
365. J. Petrie.
371. R. F. Miller.
374. J. Arnold.
375. J. B. Barnes and J. Loach.
376. J. Templeman.
378. S. Middleton.
382. J. Morrison, senr., and J. Morrison, junr.
388. J. Knott.
446. J. H. Johnson.
458. J. W. Clare.
461. J. H. Johnson.
477. G. F. Harrington.
488. R. Roberts.
492. G. T. Bousfield.
498. M. Smith.
501. T. T. Chellingworth.
513. S. Walker.
1181. G. Cheadle.
1258. J. F. Dickson.
1312. G. Castle.
1318. T. Chatwin and C. Taylor.
1333. G. T. Bousfield.
1357. J. Rubery and T. Warwick.
1359. G. T. Bousfield.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

August 16th.

1882. F. Journeaux.
2021. G. Lowry.

August 17th.

1907. V. Fouchier.
2079. W. F. Thomas.

August 18th.

1915. W. Wood.

August 21st.

1909. J. G. Martien.
1912. W. Kidman.
2013. J. G. Martien.
2082. J. G. Martien.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address
4114	August 25.	Fastening for Porte Monnaies, Pocket Books, and other Cases	C. Weintraud, jun	Offenbach on the Maine.
4115	,, 25.	A close or open fire Kitchen Range	W. Broughton	7, South-street, Finsbury.